

## TWO NEW RECORDS OF STONEFLIES (PLECOPTERA: PERLODIDAE) FROM SOUTH CAROLINA<sup>1</sup>

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**ABSTRACT:** *Hydroperla phormidia* from the Savannah River, South Carolina-Georgia state line, and *Helopicus bogaloosa* from South Carolina are newly recorded. An illustration of the head and pronotum of the nymph of *H. phormidia* is presented to aid the identification of the immature stage of this species. Ecological information for both species is included.

During ecological studies by Environmental & Chemical Sciences, Inc. (ECS) of the Savannah River and several of its tributaries on the Department of Energy's Savannah River Plant (SRP) located in southwestern South Carolina, two species of perlodid stoneflies were collected which represent new state records and interesting range extensions. The SRP lies within the Atlantic Coastal Plain Physiographic Province.

Unzicker and McCaskill (1982) listed about 130 species of stoneflies known or likely to occur in North and South Carolina. Their compilation included *Helopicus subvarians* (Banks) and *Hydroperla fugitans* (Needham and Claassen), and these two species were incorporated in their keys to the perlodid nymphs. Recently Ray and Stark (1981) reviewed the Nearctic genus *Hydroperla*, and described a new and unusual species, *H. phormidia* Ray & Stark from northwestern Florida. The two other species included in this genus, *H. fugitans* and *H. crosbyi* (Needham and Claassen), are known from the Mississippi River drainage region (Arkansas, Illinois, Indiana, Kansas, Missouri, Oklahoma, Tennessee, and Texas).

Two mature nymphs of *H. phormidia* were collected on multiplate samplers taken from two sections of the Savannah River. These records represent a substantial northeastern range extension for this species, and apparently the first verifiable records of the genus for South Carolina or Georgia (see Ray and Stark 1981, Stewart and Stark 1984). Patrick et al. (1966) described the Savannah River, including the sections where we collected this species. *Hydroperla* "nr. *harti* (Frison)" (*harti* is a synonym of *H. fugitans*) was listed from the river by these authors near where our specimens were collected. The Savannah River, at the collecting site, has

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generally a shifting sand bottom with few submerged snags and macrophyte beds. The river has a heavy to moderate silt load. Patrick et al. records may be assignable to *H. phormidia*, but these specimens were not available for study. There are no verifiable records of *H. fugitans* from North or South Carolina (Ray and Stark 1981, Stewart and Stark 1984). Additional collecting in early spring from larger streams and rivers of the Coastal Plain of Georgia, South Carolina, and North Carolina may produce additional records of *H. phormidia*.

Stark and Ray (1983), in their revision of *Helopicus*, described *H. bogaloosa* Stark & Ray from several southeastern states (Georgia, Florida, Louisiana and Mississippi). Large populations of this species were discovered in several shifting sand streams on SRP. Nymphs were collected from woody substrate or snags. The life cycle of *H. bogaloosa* was univoltine with early instars present in late-October to early November. Nymphs reached maturity as early as January and as late as April. Peak emergence of adults occurred in late March. Other stoneflies associated with *H. bogaloosa* included *Pteronarcys dorsata* (Say), *Paragnetina fumosa* (Banks), *Perlesta placida* complex, *Acroneuria abnormis* (Newman), and *A. arenosa* (Pictet). Nymphs of *H. bogaloosa* have been collected as far north as Black Creek near Hartsville, South Carolina. This species was reported as *H. subvarians* by Stark (1980) from Upper Three Runs Creek.

Since *Hydroperla phormidia*, *Helopicus bogaloosa* and *H. subvarians* may occur sympatrically, we present an illustration (Fig. 1) of the nymphal head and pronotum of *H. phormidia* to assist identification for regional workers. Of the perlodine genera occurring in the southeastern U.S., only *Hydroperla* and *Helopicus* nymphs have the combination of the occiput with a row of short, stout setae and a dark transverse band of pigment across the frons. In *Hydroperla*, the transverse dark band is interrupted laterally and in the median ocellus by circular yellow areas (Fig. 1), whereas in *Helopicus*, this band is continuous across the frons. The original illustration of the nymph of *H. phormidia* presented by Ray and Stark (1981) does not show the characteristic color pattern of the nymphal head. Stark and Ray (1983) present excellent illustrations of the nymphs of *H. bogaloosa* and *H. subvarians*.

**Material examined:** *Hydroperla phormidia*, South Carolina (Barnwell County)-Georgia (Burke County), Savannah River, river mile 152, 9 April 1984, W.B. Painter, 1 nymph: same but river mile 141.5, 11 April 1984, 1 nymph. *Helopicus bogaloosa*, South Carolina, Barnwell County, Steel Creek, SRP, January-March 1984, B.C. Kondratieff, 16 males, 11 females (reared); Aiken County, Upper Three Runs Creek, SRP, 23 March 1984, B.C. Kondratieff, 1 male, 1 female (reared); Darlington County, Black Creek, Route 15, 6 December 1984, B.C. Kondratieff, 3 nymphs.

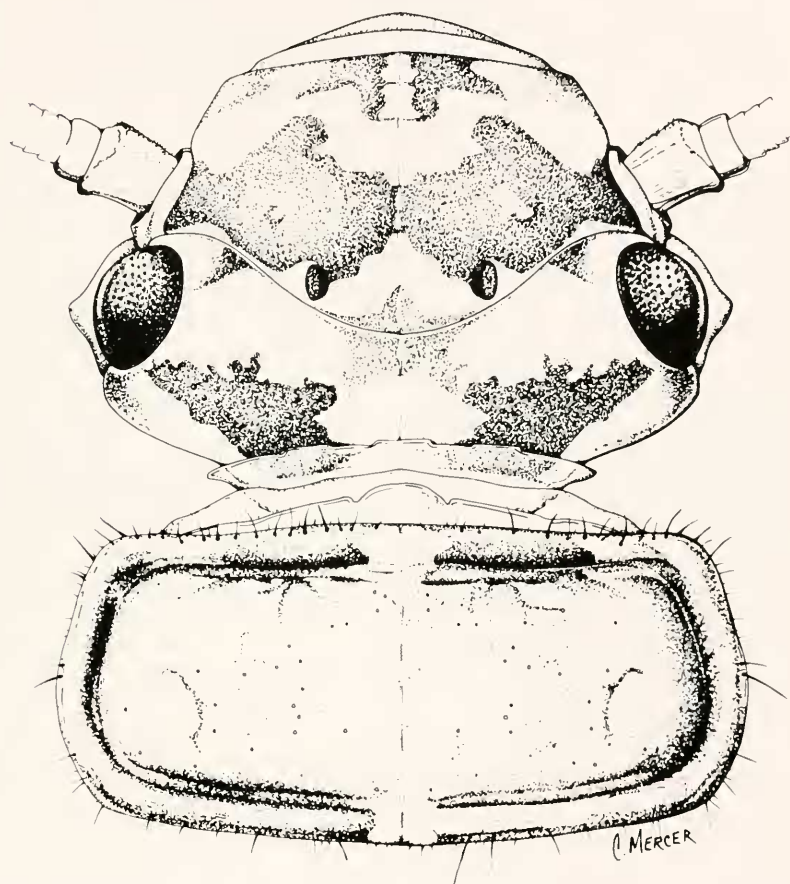


Fig. 1. *Hydroperla phormidia* nymph head and pronotum.

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